

## Pinion

The main pivot, referred to as the king pin, is seen in the steering machine of a forklift. The initial design was a steel pin which the movable steerable wheel was mounted to the suspension. Able to freely revolve on a single axis, it restricted the levels of freedom of movement of the rest of the front suspension. In the nineteen fifties, when its bearings were substituted by ball joints, more comprehensive suspension designs became available to designers. King pin suspensions are still featured on various heavy trucks because they have the advantage of being capable of carrying a lot heavier load.

The newer designs of the king pin no longer limit to moving like a pin. Nowadays, the term may not even refer to an actual pin but the axis wherein the steered wheels revolve.

The kingpin inclination or otherwise called KPI is also called the steering axis inclination or otherwise known as SAI. This is the definition of having the kingpin placed at an angle relative to the true vertical line on most new designs, as looked at from the back or front of the forklift. This has a vital effect on the steering, making it tend to return to the straight ahead or center position. The centre position is where the wheel is at its highest position relative to the suspended body of the forklift. The motor vehicles weight has the tendency to turn the king pin to this position.

The kingpin inclination likewise sets the scrub radius of the steered wheel, which is the offset between projected axis of the tire's connection point with the road surface and the steering down through the king pin. If these items coincide, the scrub radius is defined as zero. Although a zero scrub radius is possible without an inclined king pin, it needs a deeply dished wheel so as to maintain that the king pin is at the centerline of the wheel. It is much more practical to slant the king pin and make use of a less dished wheel. This likewise supplies the self-centering effect.